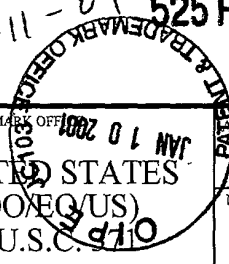


01-11-01 525 Rec'd PCT/PTO 10 JAN 2001



PC

FOR PTO-1390 (REV 11-2000)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTORNEY'S DOCKET NUMBER DN1998124US	
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371				U.S. APPLICATION NO. (If known, see 37 CFR 1.5) <b>09/743666</b>	
INTERNATIONAL APPLICATION NO. PCT/US98/14908		INTERNATIONAL FILING DATE 17/07/1998		PRIORITY DATE CLAIMED 17/07/1998	
TITLE OF INVENTION HOT KNIFE CUTTER					
APPLICANT(S) FOR DO/EO/US RATKUS, Jeffery Raymond and CAILLET, Robert Charles					
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:					
<p>1. <input checked="" type="checkbox"/> This is a <b>FIRST</b> submission of items concerning a filing under 35 U.S.C. 371.</p> <p>2. <input type="checkbox"/> This is a <b>SECOND</b> or <b>SUBSEQUENT</b> submission of items concerning a filing under 35 U.S.C. 371.</p> <p>3. <input type="checkbox"/> This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below.</p> <p>4. <input type="checkbox"/> The US has been elected by the expiration of 19 months from the priority date (Article 31).</p> <p>5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2))</p> <p>    a. <input type="checkbox"/> is attached hereto (required only if not communicated by the International Bureau).</p> <p>    b. <input type="checkbox"/> has been communicated by the International Bureau.</p> <p>    c. <input checked="" type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US).</p> <p>6. <input type="checkbox"/> An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).</p> <p>    a. <input type="checkbox"/> is attached hereto.</p> <p>    b. <input type="checkbox"/> has been previously submitted under 35 U.S.C. 154(d)(4).</p> <p>7. <input type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))</p> <p>    a. <input type="checkbox"/> are attached hereto (required only if not communicated by the International Bureau).</p> <p>    b. <input type="checkbox"/> have been communicated by the International Bureau.</p> <p>    c. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired.</p> <p>    d. <input checked="" type="checkbox"/> have not been made and will not be made.</p> <p>8. <input type="checkbox"/> An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371 (c)(3)).</p> <p>9. <input checked="" type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).</p> <p>10. <input type="checkbox"/> An English language translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).</p> <p><b>Items 11 to 20 below concern document(s) or information included:</b></p> <p>11. <input type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98.</p> <p>12. <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.</p> <p>13. <input type="checkbox"/> A FIRST preliminary amendment.</p> <p>14. <input type="checkbox"/> A SECOND or SUBSEQUENT preliminary amendment.</p> <p>15. <input type="checkbox"/> A substitute specification.</p> <p>16. <input type="checkbox"/> A change of power of attorney and/or address letter.</p> <p>17. <input type="checkbox"/> A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.</p> <p>18. <input type="checkbox"/> A second copy of the published international application under 35 U.S.C. 154(d)(4).</p> <p>19. <input type="checkbox"/> A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).</p> <p>20. <input type="checkbox"/> Other items or information:</p>					

RECEIVED

21. ☒ The following fees are submitted:**BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)):**Neither international preliminary examination fee (37 CFR 1.482)  
nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO  
and International Search Report not prepared by the EPO or JPO..... \$1000.00International preliminary examination fee (37 CFR 1.482) not paid to  
USPTO but International Search Report prepared by the EPO or JPO ..... \$860.00International preliminary examination fee (37 CFR 1.482) not paid to USPTO  
but international search fee (37 CFR 1.445(a)(2)) paid to USPTO ..... \$710.00International preliminary examination fee (37 CFR 1.482) paid to USPTO  
but all claims did not satisfy provisions of PCT Article 33(1)-(4) ..... \$690.00International preliminary examination fee (37 CFR 1.482) paid to USPTO  
and all claims satisfied provisions of PCT Article 33(1)-(4) ..... \$100.00**ENTER APPROPRIATE BASIC FEE AMOUNT =**

CALCULATIONS PTO USE ONLY

\$ 860.00

Surcharge of \$130.00 for furnishing the oath or declaration later than ☐ 20 ☐ 30  
months from the earliest claimed priority date (37 CFR 1.492(e)).

\$

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE
Total claims	12 - 20 =	-8	x \$18.00
Independent claims	4 - 3 =	1	x \$80.00
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ \$270.00
<b>TOTAL OF ABOVE CALCULATIONS =</b>			\$ 940.00

\$ 0.00

\$ 80.00

\$ 0.00

\$ 940.00

☐ Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above  
are reduced by 1/2.

\$

**SUBTOTAL =**

\$

Processing fee of \$130.00 for furnishing the English translation later than ☐ 20 ☐ 30  
months from the earliest claimed priority date (37 CFR 1.492(f)).

\$

**TOTAL NATIONAL FEE =**

\$ 940.00

Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be  
accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property +

\$

**TOTAL FEES ENCLOSED =**

\$ 940.00

Amount to be  
refunded:

\$

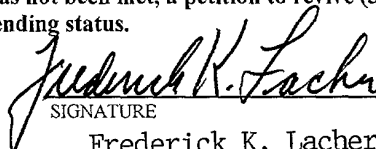
charged:

\$

- a. ☐ A check in the amount of \$ \_\_\_\_\_ to cover the above fees is enclosed.
- b. ☒ Please charge my Deposit Account No. 07-1725 in the amount of \$ 940.00 to cover the above fees.  
A duplicate copy of this sheet is enclosed.
- c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any  
overpayment to Deposit Account No. 07-1725. A duplicate copy of this sheet is enclosed.
- d. ☐ Fees are to be charged to a credit card. **WARNING:** Information on this form may become public. **Credit card  
information should not be included on this form.** Provide credit card information and authorization on PTO-2038.

**NOTE:** Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR  
1.137 (a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

Frederick K. Lacher  
THE GOODYEAR TIRE & RUBBER COMPANY  
c/o Robert W. Brown, Esq.  
1144 East Market Street  
Department 823  
Akron, OH 44316-0001  
SIGNATURE  
Frederick K. Lacher

NAME

16,502

REGISTRATION NUMBER

HOT KNIFE CUTTERTechnical Field

5 This invention pertains to methods and apparatus for cutting tire ply stock and the like.

Background Art

10 Different apparatus and methods have been utilized in order to provide cut-to-length sections of ply stock used for building tires. In U.S. Patent Nos. 3,429,490 and 3,641,855, apparatuses which utilize plunging knives are disclosed. In these apparatuses, a pair of knives is used to transpierce the ply stock at the center of the ply. Then each knife is moved to an opposite lateral edge of the ply stock. The cuts are made from the center outward in order to avoid crushing the lateral edges of the ply stock. A disadvantage of these apparatuses is that the two knives must cut between the same pair of adjacent cords.

15 In U.S. Patent No. 3,789,712 a single knife blade is used. The blade is moved into a first edge of the ply which is lifted from the conveyor up against a stock support and held there by the oblique cutting edge while the knife blade makes its cutting stroke. This is an attempt to cut the ply without plunging the knife or using two cutters. A disadvantage of this type of cutter is that the lateral edge of the ply stock is subjected to an inwardly directed cut and damage to the edge may occur.

20 U.S. Patent No. 4,156,378 discloses an apparatus which uses a circular rotatable disc cutter to engage a hard surface of an anvil and then roll on the surface to part the ply stock between a pair of cords. Again, the lateral edge is subjected to an inwardly directed cut.

25 The present invention provides a method and apparatus for severing ply stock between adjacent cords without the use of two separate knife blades in a way that does not damage lateral edges of the ply stock.

Disclosure of Invention

30 In accordance with the practice of the present invention, there is provided a new and improved method and apparatus for severing a belt package and the like to a predetermined length at a desired bias angle which employs a heated knife blade to facilitate clean cutting of the belt package between adjacent cords.

35 According to one aspect of the invention there is provided a method for cutting an associated ply stock along a cut line using a cutting apparatus comprising a knife assembly, means for moving knife assembly normally toward and away from ply stock, and means for traversing knife assembly between a first lateral edge and a second lateral edge of ply stock, knife assembly including a blade having a cutting portion including a leading point, a leading edge and a trailing edge, trailing edge

having an associated length, ply stock having spaced first and second lateral edges, the method characterized by the steps of:

a. moving knife assembly toward ply stock to insert the leading point of knife blade into ply stock at an insertion point spaced a distance from first lateral edge wherein distance is less than or equal to length in order to back-cut ply stock from insertion point to first lateral edge with trailing edge of blade; and,

b. traversing knife assembly across ply stock toward second lateral edge in order to cut ply stock from insertion point to second lateral edge with leading edge of blade and provide severance of ply stock from first lateral edge to second lateral edge.

In accordance with another aspect of the invention there is provided a knife assembly for use in a cutting apparatus for cutting an associated ply stock along a cut line of an anvil, knife assembly including a blade having a cutting portion including a leading point, a leading edge and a trailing edge, knife assembly characterized by:

a. leading edge of blade including a concave portion adjacent leading point for urging ply stock towards anvil; and,

b. trailing edge of blade having a generally linear profile.

According to a further aspect of the invention there is provided a cutting apparatus for cutting an associated ply stock along a cut line between first and second lateral edges, apparatus comprising a knife assembly, means for moving knife assembly toward and away from ply stock, and means for traversing knife assembly between first and second lateral edges of ply stock, knife assembly including a blade having a cutting portion including a leading point, a leading edge and a trailing edge, trailing edge having an associated length, cutting apparatus being characterized by:

knife assembly having a home position wherein leading point of blade is directly above an insertion point of associated ply stock and wherein a distance between first lateral edge of associated ply stock and insertion point is less than or equal to associated length of trailing edge.

One advantage of the present invention is that the ply stock can be cut between adjacent cords without severing either cord.

Another advantage of the present invention is that the ply stock can be severed without damaging either lateral edge of the ply stock.

Still other benefits and advantages of the invention will become apparent to those skilled in the art upon a reading and understanding of the following specification.

#### Brief Description of Drawings

The invention may take physical form in certain parts and arrangement of parts, a preferred embodiment of which will be described in detail in this specification and illustrated in the accompanying drawings which form a part hereof and wherein:

Figure 1 is a front view of one embodiment of the present invention with the knife blade inserted into the ply stock and showing the knife assembly at the end of the cutting stroke in phantom lines.

Figure 2 is an enlarged view of the knife blade shown in Figure 1 prior to insertion of the knife blade.

Figure 3 is a side view in section of the embodiment taken along the line 3-3 of Figure 1.

Figure 4 is a side view of the knife blade shown in Figure 2 taken along line 4-4.

Figure 5 is a partial view like Figure 2 showing the knife blade after insertion through the ply stock.

Figure 6 is a top view of the slotted anvil shown in Figure 1.

Figure 7 is a cross-sectional view of the anvil taken along line 7-7 in Figure 6.

Figure 8 is a cross-sectional view of the ply stock showing the knife blade inserted between a pair of embedded cords.

Figure 9 is an enlarged view of the knife blade showing the configuration of the cutting edges of the blade.

## **Detailed Description of the Invention**

Referring now to the drawings wherein the showings are for purposes of illustrating a preferred embodiment of the invention only and not for purposes of limiting the same, Figure 1 shows an apparatus 10 for severing tire building sheet material, referred to herein as ply stock S.

The apparatus 10 includes a knife assembly 14 which is mounted to means for moving the knife assembly toward and away from the ply stock to be cut. The apparatus 10 further includes means for moving the knife assembly 14 across the ply stock from a first lateral edge 18 thereof to a second lateral edge 22. The apparatus 10 also includes an anvil 26 for supporting the ply stock S in the immediate area below a cut line A-A. The embodiment of apparatus 10 is shown in Figures 1, 2, and 3 for illustrative purposes only and not by means of limiting the invention. In the preferred embodiment, the apparatus 10 includes a frame 30, an anvil 26, a carrier 34 including guide bars 38 extending between end support members 42, and a carriage 46. The carrier 34 is mounted on the frame 30 for movement toward and away from the anvil 26. The carriage 46 is mounted slidably along the bars 38 of the carrier 34 to traverse the knife assembly 14 between end members 42. A suitable mechanism (not shown), such as a pneumatic cylinder, may be provided for moving the

carrier 34 toward and away from the anvil 26. Likewise, a suitable mechanism, such as a chain drive (not shown) may be provided for traversing the carriage 46 along guide bars 38. The ply stock S to be severed may be supported and moved in the direction shown by the arrow in Figure 3 by any suitable conveyor (not shown). Preferably, the conveyor advances the ply stock S by successive predetermined increments thereby providing uniform lengths of ply stock suitable for their intended application. The relative positioning of the members of apparatus 10 just before a cut is made is referred to herein as "home position" 48 and is illustrated in Figure 2. At home position 48, the knife assembly 14 is positioned above the first lateral edge 18 of ply stock S.

With reference to Figure 2, one embodiment of a knife assembly 14 according to the present invention is shown. The knife assembly 14 includes blade 50 having a cutting portion 54 including leading edge 58 and a trailing edge 62 which meet at leading point 66. Leading point 66 is used to penetrate the ply stock S upon downward movement of the knife assembly 14. In the preferred embodiment, the knife blade 50 is "hawk-billed" in shape with the leading edge 58 being curved in profile as shown in Figure 2, and the trailing edge 62 presenting a straight profile. As best shown in Figure 4, the cutting portion 54 of the blade 50 is tapered to effectively cut ply stock S. Both the leading edge 58 and the trailing edge 62 are tapered in the preferred embodiment.

As shown in Figure 5, the trailing edge 62 of the knife blade 50 has a length, L, measured in a direction parallel to the direction of the blade traverse from leading point 66 to trailing end 68 that is equal to or greater than distance D from insertion point 92 to first lateral edge 18 of the ply stock S.

The preferred embodiment of the cutting apparatus 10 further includes means such as electric resistance heaters 70 for heating the knife blade 50 before each successive cutting operation.

As shown in Figure 1, in the preferred embodiment, the heaters 70 are secured to carrier 34 and do not traverse the ply stock S. The heaters 70 are positioned so that when the carriage 46 is positioned against left spacers 74 on the guide bars 38, the knife blade 50 is adjacent heaters 70 to enable the blade 50 to be heated before each successive cut. In the preferred embodiment, heater 70 is bifurcated to heat both sides of blade 50.

One embodiment of an anvil 26 for use with the present invention is shown in Figure 6 and Figure 7. The anvil 26 includes a sloping side 80 and support surface 84 having a slot 88 therein.

During a cutting operation, the slot 88 is generally aligned with the cut line indicated by A-A in Figure 6.

The preferred method for cutting the ply stock S is set forth below. The ply stock S may include embedded cords 118. As shown in Figure 8, it is important that the ply stock S be cut between the adjacent cords 118 in a way that prevents exposing a bare cord or damaging either of

the adjacent cords. It is also important that the lateral edges of the ply stock S be protected from damage which can occur when the lateral edge of the ply stock is crushed when the ply stock is cut from the outer edge inwardly. In operation, the ply stock S is positioned beneath the knife assembly 14. The ply stock S is supported in an area immediately adjacent the cut line by the support surface 84 of anvil 26. The slot 88 in the support surface 84 is aligned with the path the knife blade 50 will travel. The ply stock S is held in the cutting position by use of holding means such as a holding assembly (not shown). The knife blade 50 is pre-heated. The knife assembly 14 is then moved downwardly toward the ply stock S to bring the leading point 66 of the knife blade 50 into contact with the ply stock S. The heated knife blade 50 softens the ply stock S so that the leading point 66 of the knife blade may be plunged through the ply stock S at an insertion point 92 and into the slot 88. The insertion point 92 is located near a first lateral edge 18 of the ply stock S. On the downward stroke, as the knife blade 50 enters the ply stock S, the trailing edge 62 of the blade back-cuts the ply stock from the insertion point 92 to the first edge 18. The knife assembly 14 is then moved across the remaining width of the ply stock, while the leading edge 66 of the knife blade 50 severs the ply stock. The knife blade 50 cooperates with the slotted anvil 26 to perform the severing operation. Minor adjustments in the cord positioning during the cutting process is done by the action of the blade 50 within the slot 88 in order to prevent split cords. After the second lateral edge 22 is traversed, the knife assembly 14 is lifted away from the ply stock S. The cut length is then moved away from the anvil 26 in preparation for a successive cutting operation. The knife assembly 14 is returned to a "home" position 48 as shown in Figure 3 where the blade 50 is heated again before beginning the next cut.

The preferred embodiment of the blade 50 is shown in Figure 9. There are several aspects of the preferred blade design which provide advantages over blades known in the art. For example, as the knife blade 50 is plunged into the ply stock S, the leading point 66 prevents movement of the blade 50 away from the lateral edge. The trailing edge 62 of the blade makes an angle  $\alpha$  with the plane S-S of the ply stock S in order to back cut the ply stock from the insertion point to the first lateral edge. In the preferred embodiment,  $\alpha$  is 30 degrees but may be in the range from 20 degrees to 40 degrees. The knife blade 50 is further characterized by the leading edge 58 having both a concave portion 120 and a convex portion 122 that meet at inflection point 124. The leading edge 58 makes an angle  $\beta$  with the plane S-S at the point of insertion which is preferably 90 degrees but may be from 70° to 90°. The leading edge 58 makes an angle  $\theta$  with the plane S-S at a position X spaced from the plane of the ply stock S-S as shown in Fig. 9 a distance greater than the thickness of the ply stock so that as the knife assembly traverses the remaining width of the ply stock S, the

curvature of the leading edge 58 acts to cut the ply stock S and urge the ply stock S toward the anvil 26. Preferably the angle  $\theta$  is 60 degrees but may be in the range of 40 degrees to 70 degrees.

The preferred embodiments of the invention have been described, hereinabove. It will be apparent to those skilled in the art that the above method and apparatus may incorporate changes and modifications without departing from the general scope of this invention. It is intended to include all such modifications and alterations in so far as they come within the scope of the appended claims or the equivalents thereof.

Having thus described the invention, it is now claimed:

( 09743666 041004 )



## CLAIMS

1. A method for cutting an associated ply stock (S) along a cut line using a cutting apparatus (10) comprising a knife assembly (14), means for moving said knife assembly (14) normally toward and away from said ply stock (S), and means for traversing said knife assembly (14) between a first lateral edge (18) and a second lateral edge (22) of said ply stock (S), said knife assembly (14) including a blade (50) having a cutting portion (54) including a leading point (66), a leading edge (58) and a trailing edge (62), said trailing edge (62) having an associated length (L), said ply stock (S) having spaced first and second lateral edges (18,22), the method characterized by the steps of:
  - a. moving said knife assembly (14) toward said ply stock (S) to insert the leading point (66) of said knife blade (50) into said ply stock (S) at an insertion point (92) spaced a distance (D) from said first lateral edge (18) wherein distance (D) is less than or equal to length (L) in order to back-cut said ply stock (S) from said insertion point (92) to said first lateral edge (22) with said trailing edge (62) of said blade (50); and,
  - b. traversing said knife assembly (14) across said ply stock (S) toward said second lateral edge (22) in order to cut said ply stock (S) from said insertion point (92) to said second lateral edge (22) with said leading edge (58) of said blade (50) and provide severance of said ply stock (S) from said first lateral edge (18) to said second lateral edge (22).
2. The method of claim 1 wherein the cutting apparatus (10) further includes an anvil (26) having a slot (88) in a support surface (84), said slot (88) being generally aligned with the cut line, the method further characterized by the steps of:
  - a. inserting said leading point (66) of said knife blade (50) into said slot (88) in said anvil (26) after inserting said leading point (66) into said ply stock (S); and,
  - b. maintaining said leading point (66) within said slot (88) while said knife assembly (14) traverses said ply stock (S).
3. The method of claim 1 wherein said cutting apparatus (10) further includes means for heating said knife blade (50), the method further characterized by the step of:
  - heating said knife blade (50) before inserting said leading edge (58) into said ply stock (S).
4. The method of claim 3 further characterized by the step of:
  - maintaining said heating means near said first lateral edge (18) of said ply stock (S) during the traversing of said knife assembly (14).
5. The method of claim 1 wherein said leading edge (58) of said knife blade (50) includes a concave cutting portion (120), the method further characterized by:
  - engaging said concave cutting portion (120) of said leading edge (58) with said ply stock (S) after inserting said leading point (66) into said ply stock (S).

6. A knife assembly (14) for use in a cutting apparatus for cutting an associated ply stock (S) along a cut line of an anvil (26), said knife assembly (14) including a blade (50) having a cutting portion (54) including a leading point (66), a leading edge (58) and a trailing edge (62), said knife assembly (14) characterized by:

5 a. said leading edge (58) of said blade (50) including a concave portion (120) adjacent said leading point (66) for urging said ply stock (S) towards said anvil (26); and,

b. said trailing edge (62) of said blade (50) having a generally linear profile.

7. The knife assembly (14) of claim 6 wherein said knife assembly (14) is further characterized by:

10 said leading edge (58) of said blade (50) including a convex portion (122), said convex portion (122) meeting said concave portion (120) at an inflection point (124).

8. The knife assembly of claim 6 wherein said knife assembly (14) is further characterized by: said trailing edge (62) being inclined at an angle  $\alpha$  from 20 to 40 degrees to the plane (S-S) of the associated ply stock at the cut line.

15 9. A cutting apparatus (10) for cutting an associated ply stock (S) along a cut line between first (18) and second (22) lateral edges, said apparatus (10) comprising a knife assembly (14), means for moving said knife assembly (14) toward and away from said ply stock (S), and means for traversing said knife assembly (14) between said first (18) and second (22) lateral edges of said ply stock (S), said knife assembly (14) including a blade (50) having a cutting portion (54) including a leading point (66), a leading edge (58) and a trailing edge (62), said trailing edge (62) having an associated length (L), said cutting apparatus (10) being characterized by:

20 said knife assembly (14) having a home position (48) wherein said leading point (66) of said blade (50) is directly above an insertion point (92) of said associated ply stock (S) and wherein a distance (D) between said first lateral edge (18) of said associated ply stock (S) and said insertion point (92) is less than or equal to said associated length (L) of said trailing edge (62).

10. The cutting apparatus (10) of claim 9 further characterized by:

an anvil (26) positioned below said knife assembly (14) and having a slot (88) in a support surface (84), said slot (88) being generally aligned with said cut line.

11. The cutting apparatus of claim 9 further characterized by:

30 means (70) for heating said knife blade (50).

12. A method of cutting a sheet of material (S) from a first lateral edge (18) to an opposite second lateral edge (22) with a knife blade (50) characterized by:

a. plunging said knife blade (50) through said sheet (S) at a first position (92) spaced from said first edge (18),

b. continuing to plunge said knife blade (50) through said sheet (S) to cut said sheet (S) from said first position (92) to said first edge (18); and,

c. moving said knife blade (50) from said first position (92) to said second edge (22) to complete the cutting of said sheet from said one edge (18) to said opposite edge (22).

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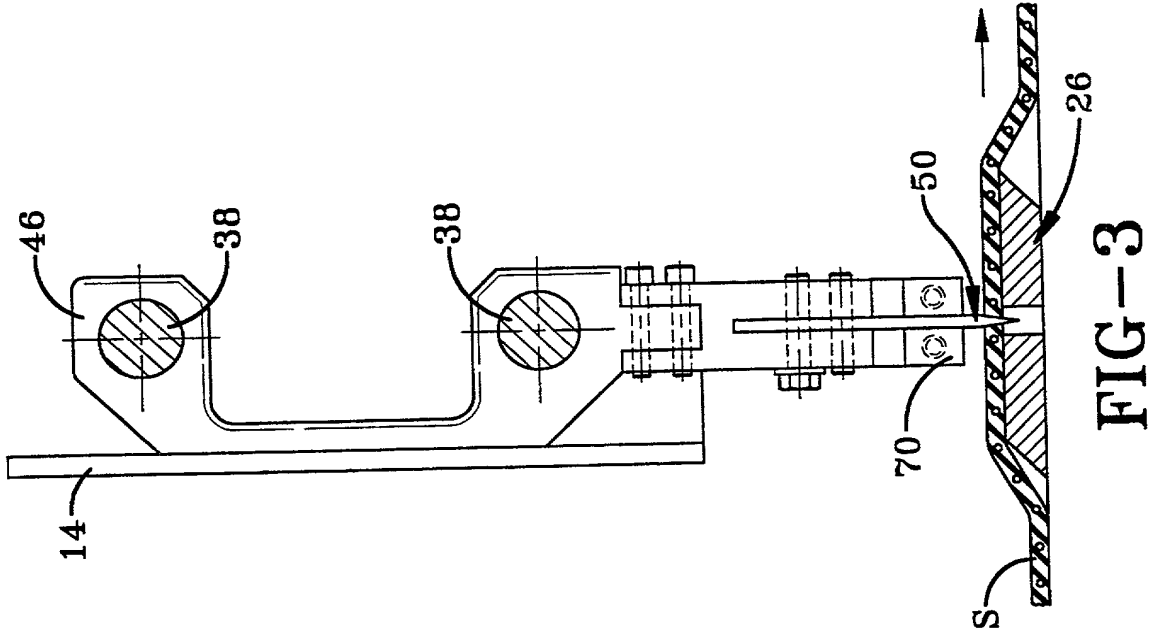


FIG-3

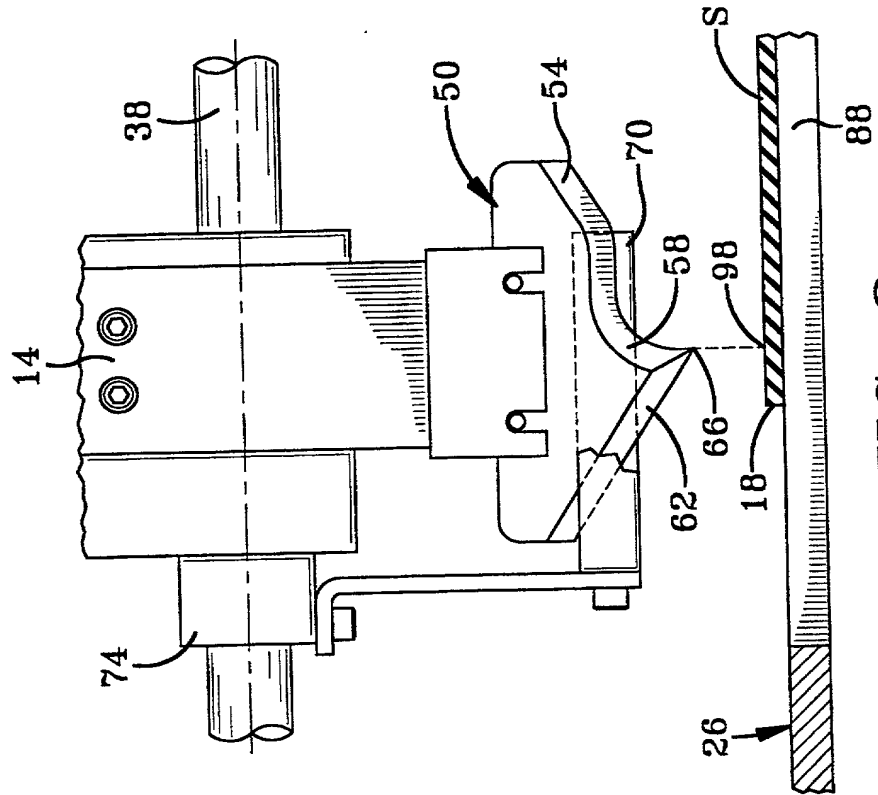


FIG-2

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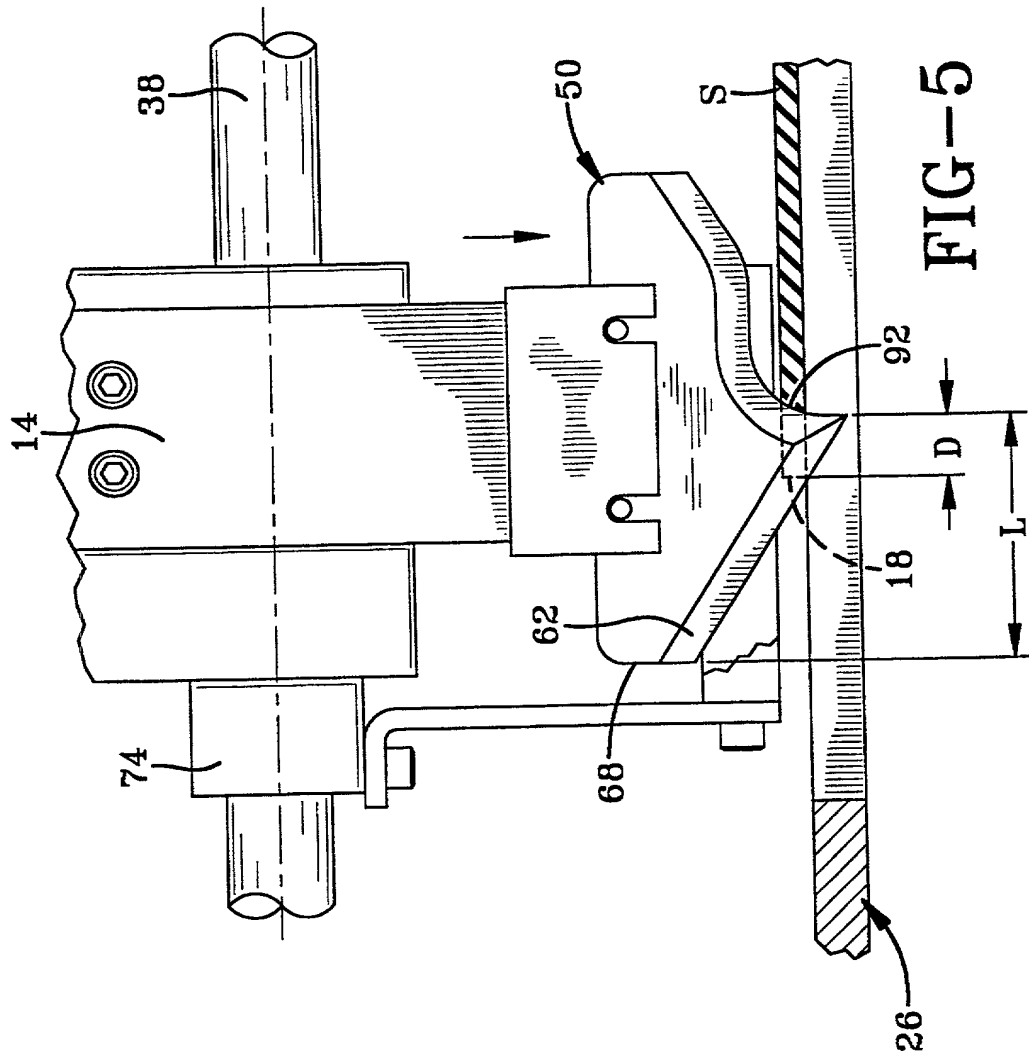


FIG-5

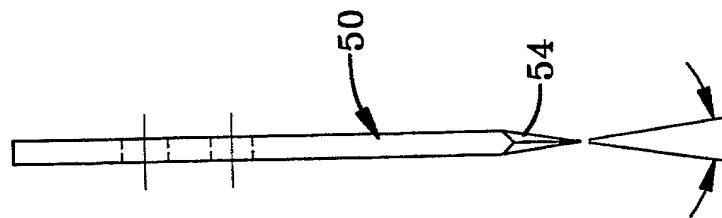
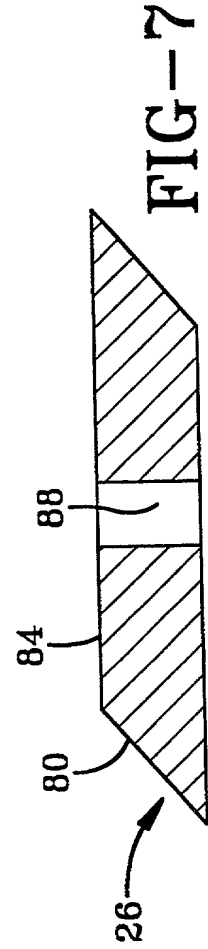
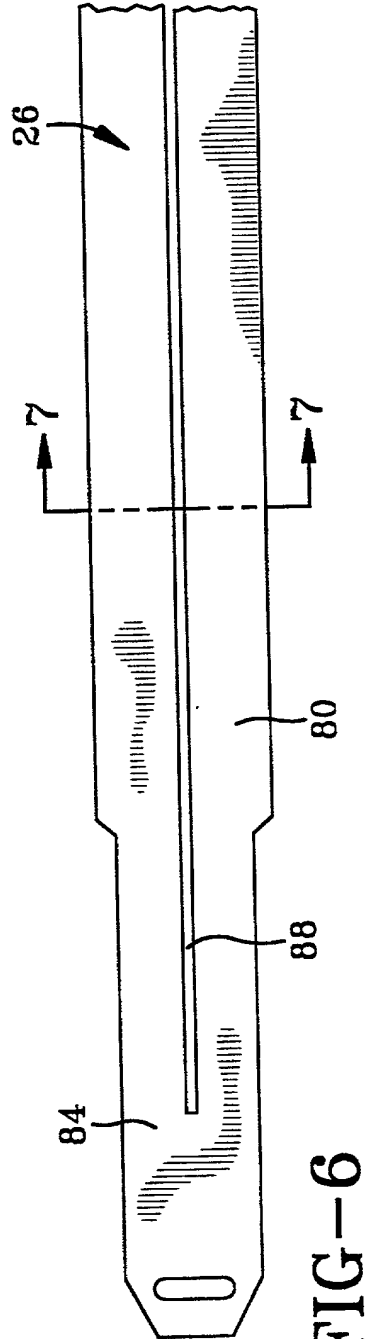
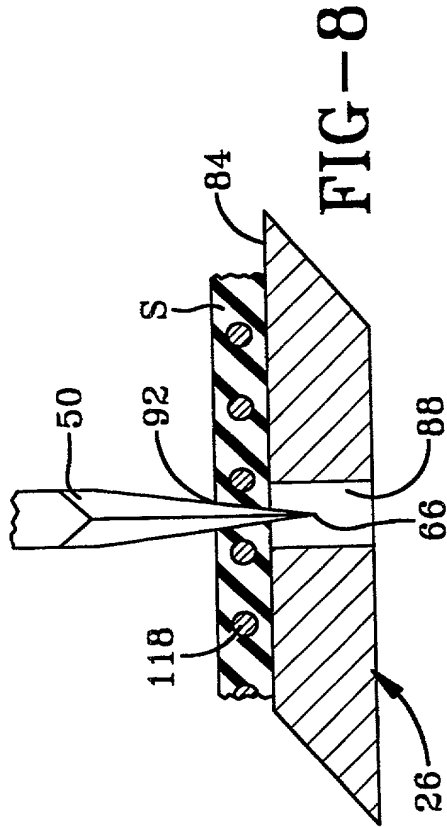


FIG-4



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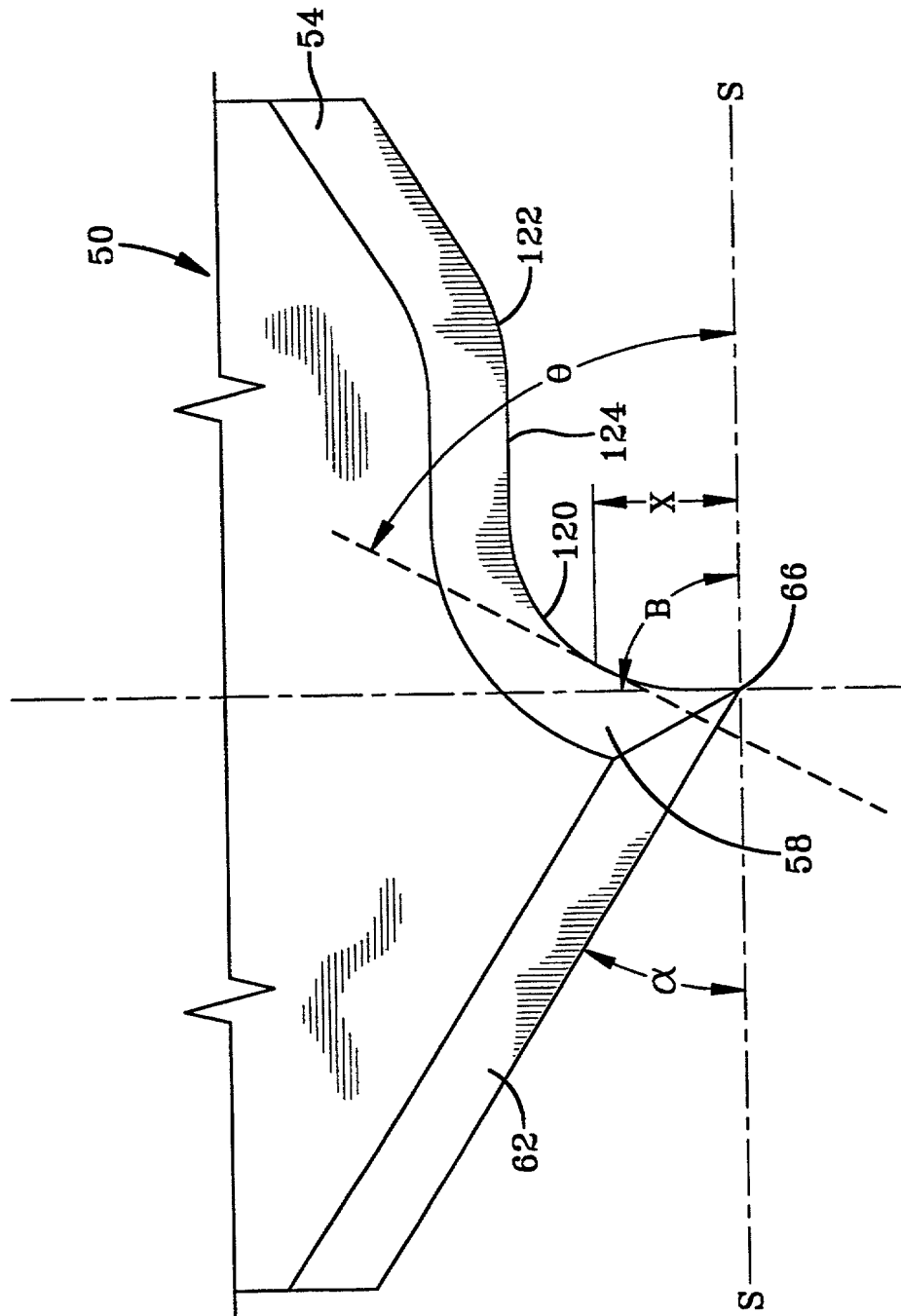


FIG-9



**DECLARATION AND POWER OF ATTORNEY**

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled **HOT KNIFE CUTTER** the specification of which (check one)

X is attached hereto.

\_\_\_\_\_ was filed on \_\_\_\_\_ as Application Serial No. \_\_\_\_\_

and was amended on \_\_\_\_\_ (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 C.F.R. §1.56.

I hereby claim the benefit under 35 U.S.C. §119(e) of any United States provisional application(s) listed below:

(Application Serial No.) \_\_\_\_\_

(Filing Date) \_\_\_\_\_

(Application Serial No.) \_\_\_\_\_

(Filing Date) \_\_\_\_\_

I hereby claim the benefit under 35 U.S.C. §120 of any United States application(s) or §365 of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. §112, I acknowledge the duty to disclose material information as defined in 37 C.F.R. §1.56 which become between the filing date of the prior application and the national or PCT international filing date of this application:

(Application Serial No.) \_\_\_\_\_

(Filing Date) \_\_\_\_\_

(Status)(patented, pending, abandoned) \_\_\_\_\_

(Application Serial No.) \_\_\_\_\_

(Filing Date) \_\_\_\_\_

(Status)(patented, pending, abandoned) \_\_\_\_\_

**POWER OF ATTORNEY**

As named inventor(s), I or we hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

Frederick K Lacher

Registration No.

16,502

Robert W Brown

Registration No.

24,499

Marc R Dion

Registration No.

31,347

Roger D Emerson

Registration No.

33,169

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statement may jeopardize the validity of the application or any patent issuing thereon.

Full name of sole or first inventor (given name, family name) Jeffery Raymond Ratkus

Inventor's signature Jeffery Raymond Ratkus

Date 7-13-98 July 13, 1998

Residence Danville, VA 24541

Citizenship USA

Post Office Address 309 Virginia Avenue, Danville, VA 24521

Full name of second joint inventor, if any (given name, family name) \_\_\_\_\_

Inventor's signature \_\_\_\_\_

Date \_\_\_\_\_

Residence \_\_\_\_\_

Citizenship \_\_\_\_\_

Post Office Address \_\_\_\_\_

Full name of third joint inventor (given name, family name) \_\_\_\_\_

Inventor's signature \_\_\_\_\_

Date \_\_\_\_\_

Residence \_\_\_\_\_

Citizenship \_\_\_\_\_

Post Office Address \_\_\_\_\_

Full name of fourth joint inventor, if any (given name, family name) \_\_\_\_\_

Inventor's signature \_\_\_\_\_

Date \_\_\_\_\_

Residence \_\_\_\_\_

Citizenship \_\_\_\_\_

Post Office Address \_\_\_\_\_



Additional inventors are being named on separately numbered sheets attached hereto.

**SEND CORRESPONDENCE TO:**

Frederick K Lacher  
c/o Robert W Brown  
The Goodyear Tire & Rubber Company  
Patent Dept., D/823  
1144 East Market Street  
Akron, Ohio 44316

**DIRECT TELEPHONE CALLS TO:**

Frederick K Lacher  
(330) 535-5445

**DECLARATION AND POWER OF ATTORNEY**

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled **HOT KNIFE CUTTER** the specification of which (check one)

X is attached hereto.

\_\_\_\_\_ was filed on \_\_\_\_\_ as Application Serial No. \_\_\_\_\_  
and was amended on \_\_\_\_\_ (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 C.F.R.

§1.56.

I hereby claim the benefit under 35 U.S.C. §119(e) of any United States provisional application(s) listed below:

_____ (Application Serial No.)	_____ (Filing Date)
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_____ (Application Serial No.)	_____ (Filing Date)
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_____ (Application Serial No.)	_____ (Filing Date)	_____ (Status)(patented, pending, abandoned)
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_____ (Application Serial No.)	_____ (Filing Date)	_____ (Status)(patented, pending, abandoned)
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**POWER OF ATTORNEY**

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Robert W Brown	Registration No.	24,499
Marc R Dion	Registration No.	31,347
Roger D Emerson	Registration No.	33,169

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Full name of sole or first inventor (given name, family name) \_\_\_\_\_

Inventor's signature \_\_\_\_\_ Date \_\_\_\_\_

Residence \_\_\_\_\_ Citizenship \_\_\_\_\_

Post Office Address \_\_\_\_\_

Full name of second joint inventor, if any (given name, family name) Robert Charles CailletInventor's signature Robert Charles Caillet Date 7-15-93 July 15, 1998Residence Lawton, OK 73507 Citizenship USA OKPost Office Address 2304 Village Drive, Lawton, OK 73507

Full name of third joint inventor (given name, family name) \_\_\_\_\_

Inventor's signature \_\_\_\_\_ Date \_\_\_\_\_

Residence \_\_\_\_\_ Citizenship \_\_\_\_\_

Post Office Address \_\_\_\_\_

Full name of fourth joint inventor, if any (given name, family name) \_\_\_\_\_

Inventor's signature \_\_\_\_\_ Date \_\_\_\_\_

Residence \_\_\_\_\_ Citizenship \_\_\_\_\_

Post Office Address \_\_\_\_\_



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